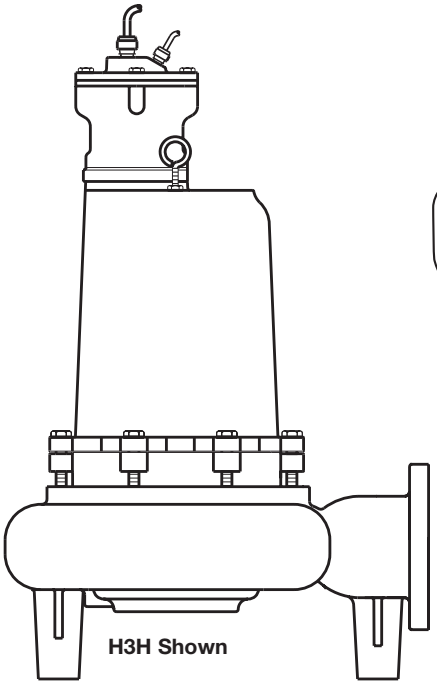
PENTAIR

HYDROMATIC®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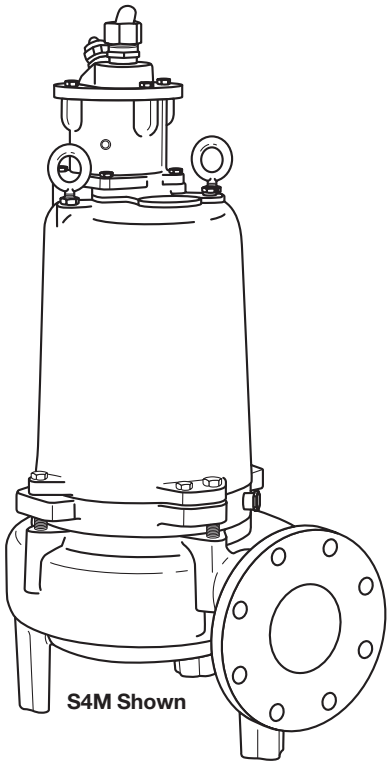
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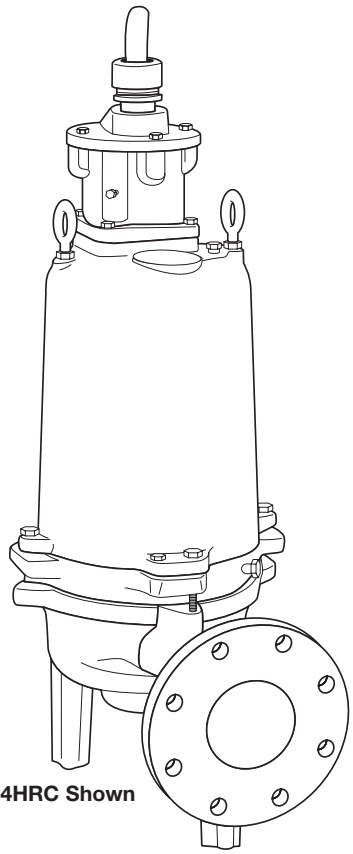

S4HRC Shown

MODELS H3H, H4H, S4M, S4P, S4HRC and S4MRC

SUBMERSIBLE SOLIDS HANDLING PUMPS

INSTALLATION AND SERVICE MANUAL

For use with product built with USEM motor.

NOTE! To the installer: Please make sure you provide this manual to the owner of the equipment or to the responsible party who maintains the system.

Item # E-03-486 | Part # 5625-486-1 | © 2013 Pentair Ltd. | 11/06/13

General Information

Attention:

This manual contains important information for the safe use of this product. Read this manual completely before using this product and refer to it often for continued safe product use. DO NOT THROW AWAY OR LOSE THIS MANUAL. Keep it in a safe place so that you may refer to it often. Reasonable care and safe methods should be practiced. Check local codes and requirements before installation.

Unpacking Pump:

Remove pump from carton. When unpacking unit, check for concealed damage. Claims for damage must be made at the receiving end through the delivery carrier. Damage cannot be processed from the factory.

WARNING: Before handling these pumps and controls, always disconnect the power first. Do not smoke or use sparkable electrical devices or flames in a septic (gaseous) or possible septic sump.

CALIFORNIA PROPOSITION 65 WARNING:

⚠WARNING This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Pumps Not Operating or in Storage:

Pumps with carbon ceramic seals must have impellers manually rotated (6 revolutions) after setting non-operational for 3 months or longer and prior to electrical start-up.

Pumps with tungsten carbide seals must have impellers manually rotated (6 revolutions) after setting non-operational for 3 weeks or longer and prior to electrical start-up.

Seal Failure:

An electrode is installed in the seal chamber so if any water enters the chamber through the first seal the electrode will be energized and a signal will be transmitted to the sensing unit at ground surface causing a red light to turn on. The electrode probe is installed in all units, but the sensing unit is supplied at extra cost and must be ordered.

In operation the seal failure unit indicates only that there is some water in the seal chamber. The pump will continue to operate, but the seal should be checked immediately after failure is indicated.

The sensing unit is recommended on all installations as good insurance against motor failure.

Pump:

The submersible pumps in this manual are supplied for 1 and 3 phase and for 200, 230, 460 or 575 volts. Power cable is supplied with the green wire for ground. Be sure green wire is connected to a good ground such as water pipe or ground stake.

Heat Sensors:

All motors have heat sensor units embedded in the motor winding to detect excessive heat. The heat sensors are set to trip at 130°C. The sensors automatically reset when motor cools to safe temperature.

The sensors are connected in series with the motor starter coil so that the starter is tripped if heat sensor opens. The motor starter is equipped with overload heaters so all normal overloads are protected by the starter.

IMPORTANT: If Hydromatic® electrical starting equipment is not supplied, the heat sensor circuit must be connected in series with the starter coil or warranty is void.

Sump Level Control:

Sump level is controlled by Hydromatic switch controls. The float is held in position in the sump by a weight attached to the power cord above the float. The cord supports the float and is adjusted for height from the surface.

Duplex systems use three controls: one set at turn-off, one set at turn-on for one pump, and one set for turn-on for two pumps. Pumps alternate operation on each successive cycle.

Two pumps operate together only if sump level rises to the third or override control. The override control also brings on the second pump in case of failure of the first pump. Extra floats with appropriate controls can be supplied for alarm functions. Triplex systems use four controls: one set at turn-off, one set at turn-on for one pump, one set at turn-on for two pumps, and one set at turn-on for three pumps. Pumps alternate each successive cycle.

Three pumps operate together only if sump level rises to the fourth control (second override). This control also brings on the third pump in case of failure of either or both of the first two pumps.

Alarm Controls:

The alarm level is usually set above the override level so the alarm will signal only if the override level is exceeded. However, some engineers prefer to have the alarm level set below the override level as it is possible for one pump to fail and the other pump to operate on the override level with the sump level never reaching the alarm level. This is particularly true in cases of low inflow capacity.

Electrical Control Panel:

It is recommended that the Hydromatic control panel be used with all pumps as proper starter heaters and connections for heat sensor wires are furnished.

Hydromatic® electrical equipment is installed in a weatherproof NEMA 3R enclosure. The electrical equipment includes a main circuit breaker for each pump, a magnetic starter with overload protection for each pump, an H-O-A switch and run light for each pump, and an electric alternator and a transformer to provide appropriate control for control circuit and alarms.

Overload Heater:

Starters with 3 leg overload protection must be supplied if the Hydromatic electrical panel is not used. The heaters must be sized in accordance with the nameplate amps on the motor. The amp draw on these submersible motors is slightly higher than a corresponding horsepower surface motor, so heaters must be sized by the nameplate rating.

IMPORTANT: Make certain the heat sensor wires are connected in series with the starter coil circuit if other than Hydromatic starters are used.

Installation Instructions

Installing Pump in Sump:

Before installing pump in sump, lay it on side and turn impeller manually. Impeller may be slightly stuck due to factory test water, so it must be broken loose with small bar or screwdriver in edge of vanes. The impeller should turn freely.

Clean all trash and sticks from sump and connect pump to piping.

A check valve must be installed on each pump. A gate or plug valve in each pump discharge line is also recommended. This valve should be installed on the discharge side of the check valve so the line pressure can be cut off if necessary to service the check valve. Single pump systems are sometimes installed without a check valve where it is desirable to self-drain the discharge line to prevent freezing. This can be done only with short discharge lines. Otherwise water will return to the sump and cause short cycling of the pump.

NEMA 4 Junction Box (Optional):

A NEMA 4 junction box should be used to make power and control connections if electrical control panel is to be set remote from the pump sump. The Hydromatic NEMA 4 junction box is provided with compression connectors for sealing all wires. No sealing compound is needed to make connections waterproof.

Wiring diagrams are provided with the panel for making connections. The size wire to use from the panel to sump depends on motor size and distance in feet.

Be sure each wire is checked out so that a wrong connection will not be made. An ohmmeter or Megger can be used to check wire continuity.

Installing Switch Controls:

The controls are supported by a mounting bracket that is attached to sump wall, cover, or to the NEMA 4 junction box.

Cord snubbers are used to hold the cord in place. Control level can be changed at any time by loosening the snubber and readjusting cord length.

NUMBER OF CONDUCTORS REQUIRED BETWEEN CONTROL PANEL AND NEMA 4 JUNCTION BOX
POWER LINES AND CONTROL WIRES CAN BE CARRIED IN CONDUIT OR CAN BE UNDERGROUND BURIED CABLE

System Type	Number of Control Wires	Number of Power Lines	Number of Ground Wires #8	HEAT SENSOR & SEAL FAILURE	
				Number of Sensor Wires	Number of Ground Wires
Simplex	4	3	1	3	1
Simplex with Alarm	6	3	1	3	1
Duplex	6	6	2	6	2
Duplex with Alarm	8	6	2	6	2

In either a simplex or duplex system, the lower or turn-off control is set just above the top of volute, so that the volute will always be submerged during the pumping cycle. The second, or turn-on control, is set about 24 inches above the lower turn-off control.

More distance between turn-on and turn-off controls can be used, but sewage may become septic, and excessive solids may collect for the pump to handle. A frequent pumping cycle is recommended for best operation.

If an alarm system is used, this control is usually set about 6 inches above the override control.

Making Electrical Connections:

All electrical wiring must be in accordance with local codes, and only competent electricians should make the installations. Complete wiring diagrams are glued to the inside cover of the panel. All wires should be checked for grounds with an ohmmeter or Megger after the connections are made. THIS IS IMPORTANT, AS ONE GROUNDED WIRE CAN CAUSE CONSIDERABLE TROUBLE.

IMPORTANT: If equipment is not properly wired and protected as recommended, the warranty is void.

Heat Sensors and Seal Failure Connections:

Be sure heat sensor wires are connected in series with the starter coil. Connections are provided on the terminal strip.

Pump Operations

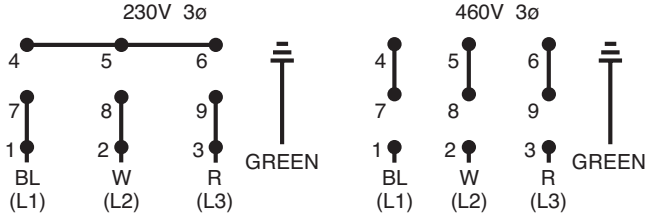
Starting System:

1. Turn H-O-A switch to Off position and then turn on main circuit breakers.
2. Open all discharge valves and allow water to rise in sump.
3. Turn H-O-A switch to Hand position on one pump and notice operation. If pump is noisy and vibrates, rotation is wrong. To change rotation, interchange any two line leads to motor 3ø only. Do not interchange main incoming lines. If duplex system, check second pump in the same manner.
4. Now set both H-O-A switches to Auto position and allow water to rise in sump until one pump starts. Allow pump to operate until the level drops to turn-off point.
5. Allow sump level to rise to start other pump. Notice run lights on panel. Pumps should alternate on each successive cycle of operation.
6. Turn both H-O-A switches to Off position and allow sump to fill to the override control level.
7. Turn both switches to Auto position and both pumps should start and operate together until level drops to turn-off point.
8. Repeat this operation cycle several times before leaving the job.
9. Check voltage when pumps are operating and check the amp draw of each pump. Check amps on each wire, as sometimes a high leg will exist. One leg can be somewhat higher (5 to 10%) without causing trouble. For excessive amp draw on one leg, the power company should be consulted.

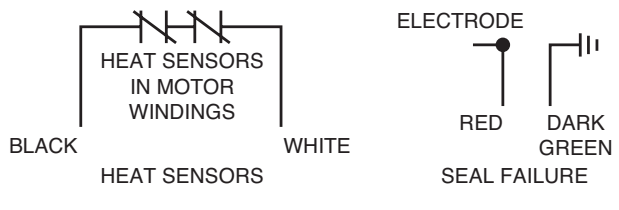
Phase Converters:

Phase converters are generally not recommended, but in cases where only single phase current is available, phase converters can be used. Be sure to size the phase converter large enough for the amp draw specified on the motor nameplate, not necessarily by motor horsepower. The warranty on all three phase submersible motors is void if operated with single phase power through a phase converter, and 3 leg ambient compensated extra-quick trip overload protectors are not used.

DUAL VOLTAGE 3 PHASE MOTOR WIRING



HEAT SENSORS AND SEAL FAILURE CONNECTIONS FOR ANY VOLTAGE MOTOR



Pump Maintenance

Lubrication or other maintenance is not required, as the motors are oil filled.

Generally, these pumps give very reliable service, and can be expected to operate for many years without failure under normal operating conditions.

Lightning:

In some areas where considerable lightning occurs, it is recommended that a lightning arrestor be installed at the control panel. Lightning arrestors are good insurance against damage to an expensive motor.

Field Service on Motor:

All submersible motors out of warranty can be serviced in the field by any reliable motor service shop. Any pump in warranty must be returned to the factory for service or repaired at an authorized Hydromatic® service center. Charges will not be allowed if in warranty pump is not taken to an authorized Hydromatic service center.

When field service is performed on a pump, these instructions should be carefully followed.

Replacing Stator:

1. If stator only is damaged, it may not be necessary to completely dismantle pump as stator and housing can be lifted from pump without disturbing seals or bearings.
2. To drain all oil from upper housing, remove drain plug in bottom of stator housing and remove plug in top of housing to allow air to enter.
3. After chamber is drained, remove hold-down bolts and lift off. Use care in lifting as the seal failure connecting wire must be disconnected before housing is completely removed.
4. Set assembly on bench and remove connection box. When box is lifted off, connection wires to motor will be exposed. These wires will probably be burned, but each wire is tagged with a metal marker giving wire number. Cut the wires.

   If the leads to the connection box are burned, a complete new connection box with new wire must be used. The wires are potted in with sealing compound and a new unit must be obtained from the factory.
5. The stator is held in the housing with a bolted-in clamp ring.
6. After ring is removed, turn housing upright and bump on hardwood blocks. This should jar the stator loose and allow it to drop out.
7. Thoroughly clean housing before replacing new stator. Replace stator and make all wire connections to connection box before replacing housing on pump. This is important as leads must be tucked behind the windings by using hands up through rotor core.

   IMPORTANT: Use only compression type insulated connectors on the wires.

   Do not tape leads as oil will deteriorate the tape and cause damage to stator and bearings.
8. Check top bearing. If clean and does not turn rough, bearings can be reused and it is not necessary to completely dismantle pump to change bearings. If bearings are damaged with dirt or heat, they must be replaced. Remember to reinstall the upper bearing load spring.
9. Replace stator housing onto seal chamber and bolt in place. BE SURE SEAL FAILURE WIRE IS CONNECTED BEFORE HOUSING IS ASSEMBLED.

   Be sure O-ring seal has been replaced. If O-ring is nicked or cut, replace with new one. This applies to all O-rings used in assembly.

WARNING

WARRANTY IS VOID IF HEAT SENSORS ARE NOT CONNECTED AS SHOWN (IN SERIES WITH CONTACTOR OIL)

TWO WIRE CONTROL OFFERING AUTOMATIC RESET

THREE WIRE CONTROL OFFERING AUTOMATIC RESET

IN CERTAIN APPLICATIONS THE NEC MAY REQUIRE THREE OVERLOAD RELAYS

10. After all leads are reconnected in the connection box, make a high voltage ground test on each wire. The only wire that should show ground is the green power lead and the ground lead in the auxiliary control cable.
11. For safety, complete pump should be air checked under water for leaks. Lay pump on side for this oil filling with oil fill hole upright. Do not completely fill; leave oil about 1 inch below the plug hole. Use only Hydromatic® submersible oil in this chamber or high grade transformer oil. Replace the plug; use Permatex on threads. Install air valve in top plug opening of motor housing and charge housing with about 10 psi of air. Be sure air is dry. Do not use air line where water may be trapped in the line. Submerge complete unit under water and check for leaks.
12. Refill motor chamber with oil. Use high grade transformer oil or Hydromatic special submersible oil. Fill chamber until oil covers top of the windings. Leave air space in top for expansion. Use Permatex on plug threads.

Replacing Seals and Bearings:

1. Drain all oil from motor chamber and seal chamber as described.
2. Remove motor housing as described.
3. Remove bolts that hold seal chamber to pump housing. Use back-off screws to break loose. With hardwood block, tap end of impeller to loosen from shaft. When free, remove impeller from shaft.
4. Lift rotating assembly (rotor, shaft and impeller) from pump case and place horizontally on bench.
5. **Impeller Removal**

   Hold rotor and remove bolt and washer from impeller end of shaft, then thread bolt back into shaft. The impeller is keyed to the shaft, so by using a screwdriver on opposite sides behind the impeller, apply force, then tap on the end of the bolt to break impeller loose from taper shaft. Remove impeller.

   IMPORTANT: The impeller is designed to be self-tightening when running, so impeller may be difficult to break loose. If this is the case, use plastic or rubber hammer on impeller tip to free. Remove impeller.
6. Remove lower seal spring and pry out seal with screwdriver.
7. To remove seal housing, take out socket head bolts and using bolts in back of holes, pry plates loose. This will force out lower seal if not already removed.
8. Remove snap ring that holds upper seal. Pull seal if it is free. If not free, it can be forced off when shaft is removed.
9. Remove 4 bolts that hold bearing housing in place. Set assembly in upright position and bump end of shaft on hardwood block. This will push the bearing from the housing and will force upper seal from shaft.
10. Use bearing puller to remove bearings. Replace with new bearings. Press only on inner face of bearing when replacing. Pressing on outer face can damage the bearing.

    IMPORTANT: DO NOT USE ANY OF THE OLD SEAL PARTS. REPLACE WITH ALL NEW SEALS.
11. Thoroughly clean all castings before replacing seals. One grain of dirt between the seal faces can cause failure.
12. Examine all O-rings for nicks before using.
13. Use Locktite® on socket head locking screw in end of shaft.

Pump Troubleshooting

Below is a list of common problems and the probable causes:

Pump will not start.

1. No power to the motor. Check for blown fuse or open circuit breaker.
2. Selector switch may be in the Off position.
3. Control circuit transformer fuse may be blown.
4. Overload heater on starter may be tripped. Push to reset.

Pump will not start and overload heaters trip.

1. Turn off power and check motor leads with Megger or ohmmeter for possible ground.
2. Check resistance of motor windings. All 3 phases should show the same reading.
3. If no grounds exist and the motor windings check OK, remove pump from sump and check for clogged or blocked impeller.

Pump operates with selector switch in Hand position but will not operate in Auto position.

1. This indicates trouble in the float level control or the alternator relay.
2. Check control panel for trouble.

Pump runs but will not shut off.

1. Pump may be air locked. Turn pump off and let set for several minutes, then restart.
2. Lower float control may be hung-up in the closed position. Check in sump to be sure control is free.
3. Selector switch may be in the Hand position.

Pump does not deliver proper capacity.

1. Discharge gate valve may be partially closed or partially clogged.
2. Check valve may be partially clogged. Raise level up and down to clear.
3. Pump may be running in wrong direction. Low speed pumps can operate in reverse direction without much noise or vibration.
4. Discharge head may be too high. Check total head with gauge when pump is operating. Total head is discharge gauge pressure converted to feet plus vertical height from water level in sump to center line of pressure gauge in discharge line. Gauge should be installed on pump side of all valves. Multiply gauge pressure in pounds by 2.31 to get head in feet.
5. If pump has been in service for some time and capacity falls off, remove pump and check for wear or clogged impeller.

Motor stops and then restarts after short period but overload heaters in starter do not trip.

1. This indicates heat sensors in the motor are tripping due to excessive heat. Impeller may be partially clogged giving a sustained overload but not high enough to trip overload heater switch.
2. Motor may be operating out of liquid due to a failed level control.
3. Pump may be operating on a short cycle due to sump being too small or from water returning to sump due to a leaking check valve.

Common Parts List

Ref. No.	Part No.	Part Description	Qty.
1	19101A010	SCREW – HHC, 3/8-16UNC x 1	8
2	016640081	PLUG – PIPE, 3/8	1
3	152770305	35' CORD ASSEMBLY 10-4	1
	152770315	35' CORD ASSEMBLY 8-4 SOOW	1
	152770325	35' CORD ASSEMBLY 8-4 W	1
	152770335	35' CORD ASSEMBLY 6-4	1
4	000650031	UPPER BEARING – BALL	1
5	001780041	SCREW-HHC	4
6	009750171	RING – RETAINING	1
7	070720002	HOUSING – SEAL	1
8	009750031	RING – RETAIN. (EXT)	1
9	001500291	O-RING, 1/8 x 3.359 ID #2-237	1
10	001500241	O-RING, 1/8 x 8.984 ID #2-270	2
11	142990021	KEY – 1/8 SQ.	VARIES
12	070700002	HOUSING – BEARING	1

Ref. No.	Part No.	Part Description	Qty.
13	084720085	SEAL FAILURE ASS'Y	1
14	070690002	HOUSING – MOTOR	1
15	000640041	SPRING – BEARING ADJ.	1
16	12672A001	CONNECTOR – SPLICE	3
17	001500071	O-RING, 1/8 x 2.234 ID #2-228	1
18	000730011	CONNECTOR – WIRE	3
19	001500121	O-RING, 1/8 x 3.734 ID #2-240	1
20	19101A021	SCREW – HHC, 3/8-16UNC x 1-1/2	2
21	060000211	WIRE W/TERMINAL	1
22	070740003	RING – RETAINING	1
23	009200011	SEAL – UPPER, CARBON CERAMIC	1
24	081000005	SEAL – LOWER, CARBON CERAMIC	1
25	002390251	SCREW – HHC, 1/2-13UNC x 3-1/2 S4P, H3H and H4H	4
	19103A062	SCREW – HHC, 1/2-13 UNC x 3-1/4 S4M, S4MRC and S4HRC	4

Ref. No.	Part No.	Part Description	Qty.
26	083460033	KEY, 3/8 S4P, H3H and H4H	1
	083460011	KEY, 3/8 S4M, S4MRC and S4HRC	1
27	000650311	BEARING – BALL S4P, H3H and H4H	1
	08565A027	BEARING – BALL S4M, S4MRC and S4HRC	1
28	007360061	SPACER	VARIES
29	010060011	CONNECTOR (STATOR W/CONN. BOX)	VARIES
30	008530001	CONNECTOR	VARIES
31	024940001	CONNECTOR – WIRE	VARIES
	151760007	LIFTING BAIL	1

Motor Parts List

S4M and S4MRC – 4-Pole 1750 RPM

Item	Description	5 HP 230/1/1750	5–7.5 HP 200/3/1750	5–7.5 HP 230/3/1750	5–7.5 HP 460/3/1750	5–7.5 HP 575/3/1750	7.5 HP 230/1/1750
A1	Connection Box	071380015	071380015	071380005	071380005	071380015	071380015
A2	Rotor/Shaft Ass'y	141420115	141390115	141390115	141390115	141390115	141440115
A3	Stator	141420011	141402031	141400031	141400031	141406031	141440011

Item	Description	10 HP 200/3/1750	10 HP 230/3/1750	10 HP 460/3/1750	10 HP 575/3/1750	15 HP 200/3/1750	15 HP 230/3/1750	15 HP 460/3/1750	15 HP 575/3/1750
A1	Connection Box	071380015	071380005	071380005	071380015	071380015	071380005	071380005	071380015
A2	Rotor/Shaft Ass'y	141410115	141410115	141410115	141410115	141410115	141410115	141410115	141410115
A3	Stator	141412031	141410031	141410031	141416031	141432031	141430031	141430031	141436031

S4M and S4MRC – 6-Pole 1150 RPM

Item	Description	3 & 5 HP 200/3/1150	3 & 5 HP 230/3/1150	3 & 5 HP 460/3/1150	3 & 5 HP 575/3/1150
A1	Connection Box	071380015	071380005	071380005	071380015
A2	Rotor/Shaft Ass'y	141390115	141390115	141390115	141390115
A3	Stator	142972031	142970031	142970031	142976031

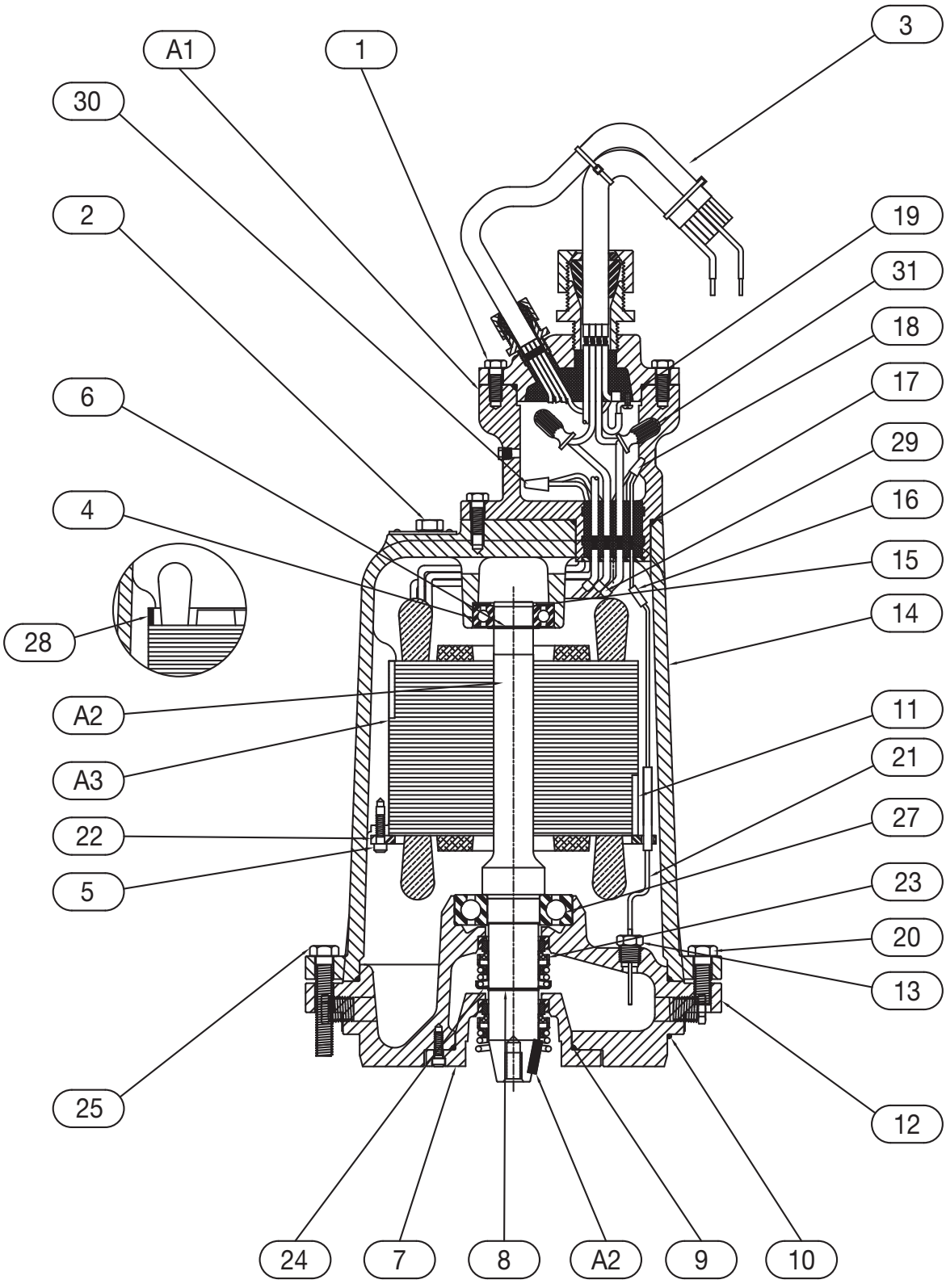
S4P, H3H and H4H – 1750 RPM

Item	Description	5 HP 200/1/1750	5 HP 230/1/1750	5 & 7.5 HP 200/3/1750	5 & 7.5 HP 230/3/1750	5 & 7.5 HP 460/3/1750	5 & 7.5 HP 575/3/1750	7.5 HP 230/1/1750	10 HP 200/3/1750
A1	Connection Box	071380015	071380015	071380015	071380005	071380005	071380015	071380015	071380015
A2	Rotor/Shaft Ass'y	141420145	141420145	141390155	141390155	141390155	141390155	141440155	141410155
A3	Stator	141422011	141420011	141402031	141400031	141400031	141406031	141440011	141412031

Item	Description	10 HP 230/3/1750	10 HP 460/3/1750	10 HP 575/3/1750	15 HP 200/3/1750	15 HP 230/3/1750	15 HP 460/3/1750	15 HP 575/3/1750
A1	Connection Box	071380005	071380005	071380015	071380015	071380005	071380005	071380015
A2	Rotor/Shaft Ass'y	141410155	141410155	141410155	141410155	141410155	141410155	141410155
A3	Stator	141410031	141410031	141416031	141432031	141430031	141430031	141436031

S4HRC – 3450 RPM

Item	Description	10 HP 200/3/3450	10 HP 230/3/3450	10 HP 460/3/3450	10 HP 575/3/3450	15 HP 200/3/3450	15 HP 230/3/3450	15 HP 460/3/3450	15 HP 575/3/3450
A1	Connection Box	071380015	071380005	071380005	071380015	071380015	071380005	071380005	071380015
A2	Rotor/Shaft Ass'y	141450115	141450115	141450115	141450115	141450115	141450115	141450115	141450115
A3	Stator	141452031	141450031	141450031	141456031	141462031	141460031	141460031	141466031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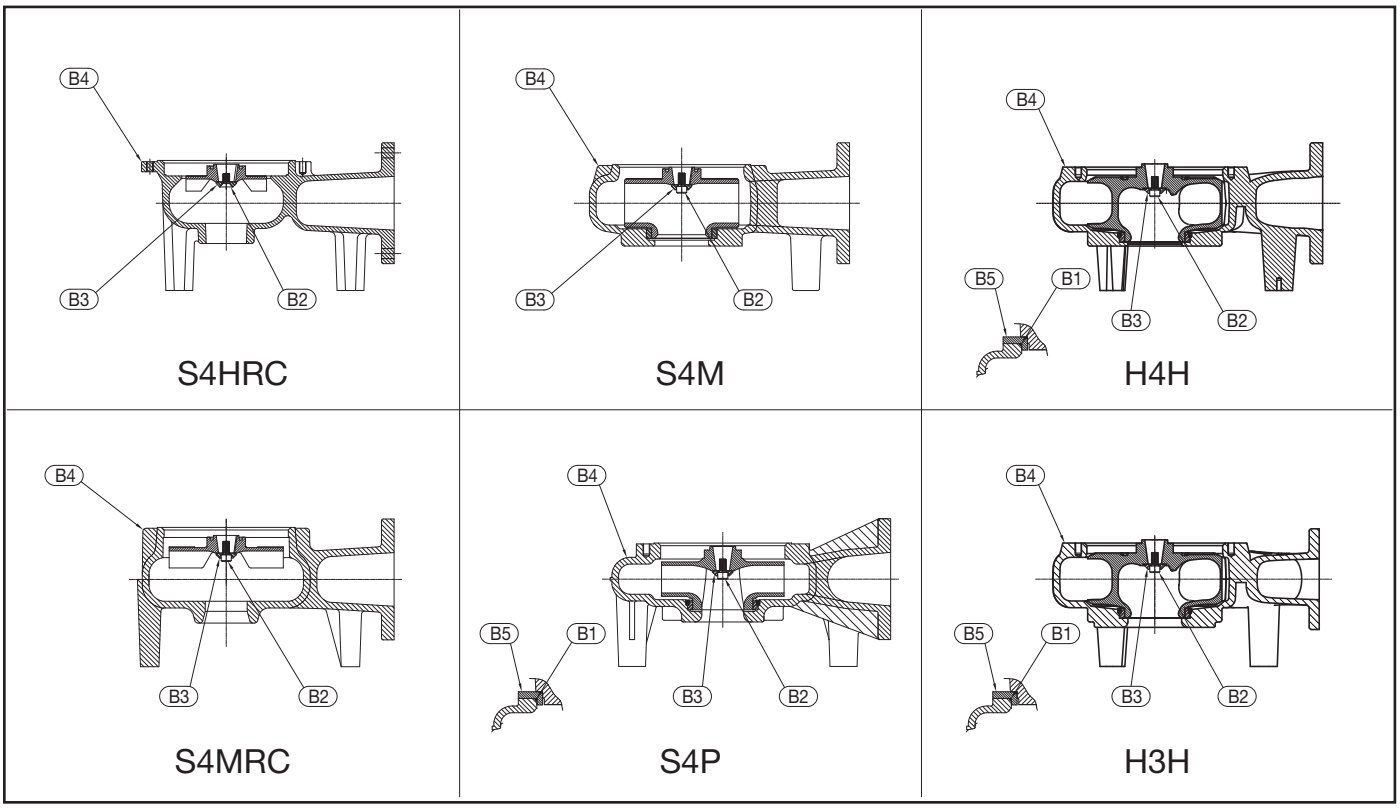
Wet Ends Parts List



Item	Description	S4M	S4P	S4HRC	S4MRC	H4H	H3H
B1	O-RING, 1/8 x 9.984 ID #2-274	–	001500471	–	–	001500471	001500471
B2	SCREW – CAP	005680021	005680021	029210041	005680021	005680021	005680021
B3	WASHER – IMPELLER SST	080230001	080230001	080230011	080230001	080230001	080230001
B4	VOLUTE	070680015	137210015	082120002	070800002	151470015	151470002
B5	SPACER	–	137720003	–	–	137720003	137720003
–	IMPELLER	070710152 (6.88)	137220112 (7.50)	082130082 (4.69)	070810082 (6.75)	151460072 (8.25)	151460072 (8.25)
		070710132 (7.56)	137220082 (8.25)	082130042 (5.00)	070810022 (8.00)	151460032 (9.25)	151460032 (9.25)
		070710052 (8.00)	137220042 (9.25)	082130052 (5.69)	070810012 (8.50)	151460002 (10.00)	151460002 (10.00)
		070710012 (9.00)	137220012 (10.00)	–	070810132 (8.69)	–	–
		–	–	–	070810002 (9.00)	–	–

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STANDARD LIMITED WARRANTY

Pentair Hydromatic® warrants its products against defects in material and workmanship for a period of 12 months from the date of shipment from Pentair Hydromatic or 18 months from the manufacturing date, whichever occurs first – provided that such products are used in compliance with the requirements of the Pentair Hydromatic catalog and technical manuals for use in pumping raw sewage, municipal wastewater or similar, abrasive-free, noncorrosive liquids.

During the warranty period and subject to the conditions set forth, Pentair Hydromatic, at its discretion, will repair or replace to the original user, the parts that prove defective in materials and workmanship. Pentair Hydromatic reserves the right to change or improve its products or any portions thereof without being obligated to provide such a change or improvement for prior sold and/or shipped units.

Start-up reports and electrical schematics may be required to support warranty claims. Submit at the time of start up through the Pentair Hydromatic website: http://forms.pentairliterature.com/startupform/startupform.asp?type=h. Warranty is effective only if Pentair Hydromatic authorized control panels are used. All seal fail and heat sensing devices must be hooked up, functional and monitored or this warranty will be void. Pentair Hydromatic will cover only the lower seal and labor thereof for all dual seal pumps. Under no circumstance will Pentair Hydromatic be responsible for the cost of field labor, travel expenses, rented equipment, removal/reinstallation costs or freight expenses to and from the factory or an authorized Pentair Hydromatic service facility.

This limited warranty will not apply: (a) to defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with the printed instructions provided; (b) to failures resulting from abuse, accident or negligence; (c) to normal maintenance services and parts used in connection with such service; (d) to units that are not installed in accordance with applicable local codes, ordinances and good trade practices; (e) if the unit is moved from its original installation location; (f) if unit is used for purposes other than for what it is designed and manufactured; (g) to any unit that has been repaired or altered by anyone other than Pentair Hydromatic or an authorized Pentair Hydromatic service provider; (h) to any unit that has been repaired using non factory specified/ OEM parts.

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Some states do not permit some or all of the above warranty limitations or the exclusion or limitation of incidental or consequential damages and therefore such limitations may not apply to you. No warranties or representations at any time made by any representatives of Pentair Hydromatic shall vary or expand the provision hereof.

PENTAIR

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Warranty Rev. 12/13